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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/849,717 | 05/04/2001 | Leonid N. Shekhter | 6160-1P57 | 9644 |

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EXAMINER

WYSZOMIERSKI, GEORGE P

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 1742 | 13 |

DATE MAILED: 06/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------------|---------------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/849,717 | GOLDBERG ET AL. <i>OT</i> |
| | Examiner | Art Unit |
| | George P Wyszomierski | 1742 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 24 March 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,3-11,13-18 and 21-23 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,3-11,13-18 and 21-23 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner. *See page 2.*
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

| | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1742

1. The specification is objected to because page 9, line 26 refers to drawing features 34. However, no such feature appears on the drawings.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 4, 7-11, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner (U.S. Patent 2,516,863).

Gardner column 3, lines 49-75 discloses reacting tantalum pentoxide with aluminum to produce tantalum metal, and indicates that the reaction is highly exothermic. The reactants appear to be in solid form in the Gardner process. With regard to instant claim 10, clearly a suboxide or non-stoichiometric oxide will occur at some point in the Gardner process, even if not specifically recited therein.

The prior art does not specify that the reaction is self-sustaining, does not specify the use of a vertical tube furnace as recited in instant claim 7, and does not specify the use of a stoichiometric amount of reducing agent compared to the oxide feed as set forth in instant claim 16. These differences are not seen as resulting in a patentable distinction between the Gardner process and that presently claimed because:

a) With respect to a self-sustaining reaction, the Gardner process is essentially a chemical reaction. The examiner's position is that any characteristic of "self-sustaining" in such a process would result naturally from the reactants used and the reaction conditions. Because

these factors may be the same in either the Gardner process or the claimed invention, no patentable distinction is seen in this aspect of the invention.

b) The vertical tube furnace limitation is seen as being largely an apparatus limitation on the claimed process, and such an apparatus limitation does not render an otherwise known process patentable. Compare *In re Sweeney* (72 USPQ 501).

c) With regard to the stoichiometric mixture, the examiner's position is that one of skill in the chemical arts would be motivated to use an amount of reductant as close to stoichiometric as possible, because such an amount would be the smallest amount that could be used and still result in a complete reduction of the oxide. Thus, to perform the Gardner processes under the conditions defined in the instant claim would have been considered an obvious expedient by one of ordinary skill in the art.

Thus, a *prima facie* case of obviousness is established between the disclosure of Gardner et al. and the process as presently claimed.

4. Claims 1, 4, 6-11, 13-18, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loffelholz et al. (U.S. Patent 6,136,062).

Loffelholz discloses producing niobium or tantalum powder by exothermic reduction of the oxide of the desired metal(s) using molten magnesium as a reductant. At an intermediate stage, a suboxide is formed (see Loffelholz column 1, line 42). The powders thus produced are sintered and made into capacitors; see Loffelholz column 8, lines 1-10 and Table 3.

The prior art does not specify that the above reaction is self-sustaining, and does not disclose the particle size distribution as recited in instant claims 13 and 14. However, the Loffelholz process is essentially a chemical reaction, and features such as a self-sustaining characteristic or a particle size obtained in such a reaction would appear to be a function of the

Art Unit: 1742

materials used and the process steps applied to those materials. Because these factors may be the same in either the prior art or the claimed invention, the examiner's position is that the same reaction features and particle size distribution are likely to result.

Consequently, a *prima facie* case of obviousness is established between the disclosure of Loffelholz et al. and the presently claimed invention.

5. Claims 17, 18, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner in view of any of Loffelholz et al., Albrecht et al. (U.S. Patent 4,569,693), Behrens (U.S. Patent 4,954,169), or Rerat (U.S. Patent 5,082,491).

Initially the examiner notes that this rejection is based upon Gardner in view of any of the secondary references (as it was on page 6 of the prior Office Action), and not upon the secondary references alone (without Gardner) as alleged on page 17 of Applicant's response of March 24, 2003.

The Gardner patent does not disclose the steps of sintering and forming into capacitors as recited in the instant claims. Each of the secondary references indicate that it is commonly known in the art that tantalum powders (as produced by Gardner) may be subjected to sintering and formed into capacitors. Consequently, the combined teachings of Gardner with any of Loffelholz, Albrecht, Behrens, or Rerat would have taught the claimed invention to a person of ordinary skill in the art.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner or Loffelholz et al., either of which in view of Polese et al. (U.S. Patent 6,096,111). This is a new ground of rejection.

The Gardner and Loffelholz patents, discussed *supra*, do not require that the oxide and reductant mixture be formed prior to being fed into a reaction zone for exothermic reaction. Polese indicates it to be conventional in the art to form a mixture including a refractory metal oxide and a reductant such as magnesium or aluminum prior to initiating an exothermic reaction in order to form the desired product. Polese discloses that this process results in a more uniformly sintered, homogeneous distribution of the components throughout the structure; see Polese column 4, lines 20-22. Because of these associated advantages as disclosed by Polese, it would have been considered an obvious expedient to one of ordinary skill in the art to perform the Gardner or Loffelholz process under the conditions as described by Polese et al.

7. In the response filed March 24, 2003, Applicant has amended the independent claim so that the previous rejections based upon Gohin, Meyer, or Higgins et al. are no longer applicable to the instant claims. Applicant alleges that the Gardner and Loffelholz processes are not self-sustaining, and/or are not continuous processes within the meaning of the instant claims. Applicant's arguments have been carefully considered, but are not persuasive of patentability because the characteristic of self-sustaining would appear to be a natural consequence of the reactants and reaction conditions of a chemical reaction, as set forth in the rejections *supra*. With regard to a continuous process, the prior art processes would appear to function in a continuous manner as long as additional reactant is supplied thereto. Further, the instant claims state that the oxide starting material is provided as a continuous feed or segments of continuous feed [emphasis added], i.e. do not require a completely continuous operation.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (703) 308-2531. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (703) 308-1146. The fax phone number for this Group is (703) 872-9310 for all correspondence except for After Final amendments in which case the Fax number is (703) 872-9311. The Right fax number for this examiner is (703) 872-9039. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.



GEORGE WYSZOMIERSKI
PRIMARY EXAMINER

GPW
June 2, 2003